

## REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection of Claims 1, 2, 4-18, 20-22, 28-29, 36-38, 40, 42, and 43 Under 35 USC §112, 2<sup>nd</sup> Paragraph

This rejection has been addressed by:

- amending claims 18 and 36 by changing “embossing plate” to –intaglio printing plate–;
- canceling claim 38 due to a lack of description in the original specification concerning the meaning of “spacing”;
- amending claim 40 to clarify that there are two limited partial areas and two tool tracks, and deleting the “spacing” recitation;
- amending claim 42 to recite –multiple ones of said depressions–, as suggested by the Examiner; and
- amending claim 1 to clarify that the depression is formed by movement of the engraving tool along the continuous track..

2. Addition of New Claims 44 and 45

New dependent claim 44 corresponds to previously presented claim 39, which was inadvertently canceled.

In addition, new independent claim 45 has been added to better recite the feature of a second tool track to remove the residual within the first contour. Support for new claim 45 is found in original claims 1 and 7, as well as on page 4, paragraph 4. In addition to the distinctions noted below, involving failure of the art of record to disclose or suggest calculation of a tool track based on both the desired contour and a predetermined desired depth (as discussed below), it is respectfully noted that the prior art discloses only formation

of individual tracks, and not the removal of contours within a larger depression, as recited in new claim 45.

2. Rejection of Claims 1-2, 4, 6, 14, 16-17, and 37 Under 35 U.S.C. §102(b) in view of U.S. Patent No. 5,246,319 (Prince), or Under 35 U.S.C. §103(a) in view of either U.S. Patent No. 2,210,923 (Jacquerod) or the Technical Manual from Lang GmbH (the Lang article) in view of the Prince Patent; and Rejection of Claim 36 Under 35 USC §103(a) in view of the Prince patent

These rejections are respectfully traversed on the grounds that the Prince and Jacquerod patents and the Lang article, whether considered individually or in any reasonable combination, fail to disclose or suggest the step of calculating a tool track based on both “the desired contour and a predetermined desired depth of the at least one depression,” as positively recited in independent claims 1 and 45.

Instead, Jacquerod fails to disclose any sort of numerical control, or even the use of an engraving tool, but rather discloses etching of intaglio plates; Lang fails to disclose numerical control or an engraving tool, but rather discloses a milling machine, and the method of Prince calculates the tool track based solely on the desired contour rather than based on a desired contour *and penetration depth*.

It is true that Prince varies the penetration depth, in order to ensure that the tool edge at the surface of the workpiece remains always in contact with both sides of the engraving (col. 3, lines 22 to 25 of Prince). However, the determination of penetration depth does not affect the calculation of the tool track. Instead, the tool track and penetration depth are determined independently, based on desired contour data. While the controller of Prince “takes into account” the tool depth, as stated by the Examiner in the sentence bridging pages 3 and 4 of the Official Action, the tool depth cannot be truly chosen, but rather is a direct function of the desired contour (and the dimensions of the conical tool used).

By varying the track based on the desired contour and the desired penetration depth, the claimed invention permits maximum design flexibility. The operator not only chooses a desired contour, but also a desired penetration depth. Thus, the operator can choose from among different possible penetration depths for a particular contour. If the operator chooses a shallower penetration depth, then the tool track is chosen to extend closer to the border. If the operator chooses a deeper penetration depth, the tool track is chosen so that it does not extend as close to the border. Prince does not permit such penetration depth selection. Instead, for a particular contour, the controller will calculate a particular penetration depth or depths corresponding to a calculated tool track. The operator selects only the contour, and the controller calculates a tool track and penetration depths for the selected contour.

This difference can perhaps be understood from the following table:

	<u>Input</u>	<u>Output</u>
<u>Prince</u>	Desired Contour	Tool Track Penetration Depths
<u>Claimed</u>	Desired Contour 1 <sup>st</sup> Desired Penetration Depth  Desired Contour 2 <sup>nd</sup> Desired Penetration Depth  Desired Contour 3 <sup>rd</sup> Desired Penetration Depth	Tool Track A  Tool Track B  Tool Track C

As can be seen in the table, for a particular desired contour, the claimed invention permits any of a variety of different penetration depths to be selected, with the tool track altered accordingly depending on both the desired contour and penetration depths. Prince permits the desired contour to be achieved, but it does so by automatically choosing a tool track and corresponding penetration depth. The effect of being able to define penetration depths as well as a contour is that the claimed invention permits the **gray level** of the engraving to be set in addition to the contour, since the penetration depth determines the gray

level in the type of engraving claimed. This is an important consideration in intaglio printing, but not in the carved engraving context of Prince.

As noted in previous responses, the Jacquerod patent and Lang publication also do not disclose a contour selection method based on desired contour *and* penetration depth. Thus, application of the method of Prince to the engraving apparatus of Jacquerod and Lang could not have resulted in the claimed invention. Instead, if the method of Prince were applied to the apparatus of Jacquerod or that of Lang, the result could, at best, be an apparatus in which the operator input data concerning a desired contour, and the controller calculated a tool track and penetration depths.

In fact, it would be impossible to apply the numerical control method of Prince to the intaglio plate of Jacquerod since the intaglio plate of Jacquerod is not constructed using an engraving tool, as explained in the right column of page 1, lines 49-53: "...the intaglio plate is constructed in a conventional way according to known methods by some etching process so that it has an acid resist top. It may be constructed by photographic methods or other methods." To the contrary, conventional numerical control methods, such as the method of Prince, are not suitable to achieve the intaglio printing effects of the etching process of Jacquerod precisely because they do not permit control of the penetration depths in addition to control of contour, and therefore cannot achieve the fine details that provide the *raison d'être* for using intaglio plates in the first place.

The Lang patent, on the other hand, teaches a graphical design program for engravers and milling machines, and is not at all concerned with manufacture of intaglio printing plates. Instead, the method of Lang produces dies, and the Lang patent is concerned with a particular step "Schraffieren, Abräumen" (hatching, removal) that is not at all relevant to either the numerical control method of Prince or the calculation of a tool track in connection with the engraving of an intaglio printing plate, as claimed.

As a result, it is respectfully submitted that the above listed claims are neither anticipated nor obvious in view of either the Prince patent, the Jacqueroed patent, or the Lang publication, whether considered individually or in any reasonable combination, and withdrawal of the various rejections of these claims under 35 USC §§102(b) and 103(a) is respectfully requested.

3. Rejection of Claims 1, 2, 5-11, 14, 16-18, 20, 36, and 37 Under 35 U.S.C. §103(a) in view of in view of either U.S. Patent No. 2,210,923 (Jacqueroed) or the Technical Manual from Lang GmbH (the Lang article) in view of U.S. Patent No. 4,949,270 (the Shima Patent)

This rejections is respectfully traversed on the grounds that the Shima patent fails to disclose or suggest a method of producing intaglio printing plates, as claimed, much less one that includes the step of producing at least one depression in the form of at least one line, the line defining a limited partial area of the surface, and an edge of the partial area defining a desired contour, and calculating a tool track based on the desired contour and also a predetermined desired *penetration depth*. Since the Jaccqueroed patent and the Lang publication also fail to disclose or suggest the claimed steps, and the Jacqueroed patent actually teaches formation of intaglio plates by etching rather than by using an engraving tool, it is respectfully submitted that the Jacqueroed patent and Lang article could not have suggested modification of the Shima method to obtain the claimed invention.

The calculation of a tool track according to the method of Shima is based on calculation of start and end points input by a user, and interpolation of connecting lines of curves. Thus, it cannot be said that the calculation of the tool track is Shima is carried out by predetermining a desired contour and a desired penetration depth of the area to be engraved. Instead, the profile outline (POL) is used only as an aid for the user in positioning the cursor and in inputting the coordinates such that the user can manually take care that no section within the profile outline remains unengraved.

As pointed out in a previous response, the method of Shima involves displaying the profile outline or contour on a display screen of a computer (col. 1, lines 62-65; col. 2, lines 45-46), successively positioning a cursor so as to enable its coordinates to be input at selected points on the display screen, and then calculating the tool path using the manually predetermined coordinates in order to hollow out the interior of the profile or contour displayed on the screen. This is not the same as the claimed calculation of a tool path based on a predetermined contour *and* penetration depth, as claimed, selection of the penetration depth and calculation of the tool path to take into account the penetration depth as well as the desired contour having the effect of enabling intaglio plates to be produced, and not just simple milled structures.

Like the Lang patent, which discloses a milling process for producing engraved objects, but not the production of intaglio plates, the Shima patent actually concerns so-called "pocket machining" for hollowing out the interior of the profile of a workpiece. This has nothing to do with engraving of printing or embossing plates, much less with micro-engraving to produce high-quality printed products. On the other hand, the Jacquerod patent does concern production of intaglio printing plates, but teaches chemical etching to produce the necessary fine structures. Not one of the references of record teaches a numerically controlled engraving process that enables the depth as well as the contours of resulting plate to be predetermined, and which therefore is suitable for generating intaglio printing plates. To date, intaglio printing plates must still be produced by painstaking processes of the type described in intaglio, the conventional numerical control methods exemplified by Shima and Lang being, for the reasons described above, unsuitable for producing *intaglio* printing plates.

Because the Shima and Jacquerod patents, whether considered individually or in any reasonable combination with the Lang publication, fail to teach or even suggest the claimed steps for producing an intaglio printing plate, it is respectfully submitted that the rejection

of claims 1, 2, 5-11, 14, 16-18, 20, 36, and 37 under 35 USC §103(a) is improper and should be withdrawn.

4. Rejection of Claims 17 and 43 Under 35 USC §103(a) in view of U.S. Patent Nos. 2,210,923 (Jacquerod), 4,949,270 (Shima), or the Lang Publication in view of U.S. Patent No. 4,972,323 (Cauwet)

This rejection is respectfully traversed on the grounds that the Jacquerod and Shima patents, and the Lang publication, fail to disclose a method of producing intaglio plates in which a tool track is calculated based on a desired contour *and* penetration depth, as discussed above, and on the grounds that the Cauwet patent does not make up for the lack of teachings concerning tool track calculation because the Cauwet patent, like the Prince patent discussed above, teaches establishing engraving depths *after* calculation of the tool path (and renewal of engraving depth control signals “with each path”), which is exactly contrary to the claimed invention. This can be understood from the description of X,Y control pulses, which does not involve setting the desired depth, and generation of the Z motor control pulses, which is the “next functional stage” (col. 9, lines 33-37 of Cauwet *after* the X and Y pulses are calculated, and which does not change the X,Y (tool path or track) calculation.

As a result, it is respectfully submitted that the Jacquerod, Shima, and Cauwet patents, considered individually or in any reasonable combination with the Lang publication, could not reasonably have suggested the claimed method or the plates produced thereby, and withdrawal of the rejection under 35 USC §§102(b) or 103(a) is respectfully requested.

5. Rejection of Claims 1, 2, 5-14, 16-18, 20, 21, 36-38, and 40 Under 35 USC §103(a) in view of U.S. Patent No. 2,210,923 (Jacquerod) or the Lang Publication, in view of U.S. Patent No. 4,907,164 (Guyder)

This rejection is respectfully traversed on the grounds that the Guyder patent, like the Jacquerod patent and the Lang publication, fails to disclose or suggest a method of producing intaglio plates in which removal of a predetermined area of the intaglio plate is carried out

to a desired depth and the track of the tool is calculated only on the basis of the predetermined outer contour of the area and the predetermined depth, as claimed.

The claimed invention may be thought of as a method involving graphic interpretation of a two dimensional line original as areas. In contrast, the method described by Guyder starts out from a three-dimensional model of a cavity to be milled, and arranges tool tracks at different elevations when successively cutting the model in flat cross sections, as explained in col. 4, lines 42-45. Basically, the Guyder patent involves automatic milling to successively larger penetration depths in order to provide a hollowed out area of the work piece, rather calculation of a tool track to achieve a desired penetration depth for a particular contour. The reason that Guyder can take this approach is that it concerns the formation of cavities in die tools and nozzles, and not the fine engraving control required to produce intaglio printing plates.

As a result, (I) the ordinary artisan would not have thought to use the method disclosed by Guyder in connection with the intaglio plate printing of Jacquerod, and (II) any use of the method disclosed by Guyder in the milling machine of Lang, which also involves the formation of cavities in a workpiece, would not have resulted in the claimed invention. Therefore, withdrawal of the rejection of claims 1, 2, 5-14, 16-18, 20, 21, 36-38, and 40 under 35 U.S.C. §103(a) is respectfully requested.

6. Rejection of Claims 15 and 43 Under 35 U.S.C. §103(a) in view of U.S. Patent Nos. 2,210,923 (Jacquerod), 4,907,164 (Guyder), or the Lang Publication in view of U.S. Patent No. 4,972,323 (Cauwet)

This rejection is respectfully traversed on the grounds that the Cauwet patent, as explained above, fails to disclose or suggest the step of calculating a tool path by determining the outer contour and the desired depth of an area to be engraved, and because the Cauwet patent therefore could not have suggested modification of the methods described in the Jacquerod and Guyder patents, or the Lang publication, whether considered individually or in any reasonable combination.



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Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

BACON & THOMAS, PLLC

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